ROYAL ASTRONOMICAL SOCIETY.

Vol. VI. *May* 10, 1844. No. 7.

John Lee, Esq., LL.D., in the Chair.

Josiah Rees, Esq., of Guildford Street, and William Pole, Esq., Professor of Civil Engineering, Elphinstone College, Bombay, were balloted for, and duly elected Fellows of the Society.

The following communications were read:—

1. The Right Ascensions of the Principal Fixed Stars, deduced from Observations made at the Observatory, Cape of Good Hope, in the Years 1832 and 1833. By Thomas Henderson, F.R.SS. L. and E., Professor of Practical Astronomy in the University of Edinburgh.

This catalogue contains the right ascensions of 174 principal fixed stars, reduced to January 1, 1833; being the same stars of which the declinations, observed by Mr. Henderson at the Cape, are published in Vol. X. of the *Memoirs*, with the addition of δ^2 *Eridani*, α *Persei*, and θ *Ursæ Majoris*. The observations of right ascension (with the exception of a small number) were made by the assistant-astronomer, Lieutenant William Meadows, R.N. The transit instrument, by Dollond, is 9 feet $9\frac{1}{2}$ inches in focal length, with an object-glass of 5 inches in diameter. The magnifying powers employed were 88 and 132; chiefly the latter. The clock was by Hardy, having one of his scapements, and a mercurial compensation pendulum. During the period of the observations its rate was as uniform as the rates of most transit-clocks in use at observatories. The reductions of the right ascensions to January 1, 1833 (when the sun's mean longitude was 281°), were computed from the tables in the supplements to the *Nautical Almanac* for 1832 and 1833. The coefficient of aberration was assumed to be 20″·5; and the proper motions in right ascension were taken into account, when they appeared to amount annually to 0ˢ·01 of time. The right ascensions given in the catalogue are the means of all the determinations from observations made above and below the pole without distinction. The annual precessions are calculated for the beginning of 1833, from the *Tabulæ Regiomontanæ*. The right ascensions of the present catalogue are compared with those of the same stars in the catalogues of Lacaille, Bradley, Piazzi, Rumker, Johnson, and Pond (all reduced to the same epoch), and the differences exhibit the effect of the proper motion in right ascension for each of the stars respectively.

From these differences, combined with the differences of declination given in Mr. Henderson's former catalogue above referred

to, the annual proper motions of the stars in the present catalogue are obtained. A table is given, which contains such of them as appear to have proper motions not less than 0″·1 of arc; they amount to 35. The following are those whose annual proper motions exceed 0″·4.

Star.	Total Annual Proper Motion.	Annual Proper Motion in Right Ascension (in Time).	Annual Proper Motion in Decl.
	″	sec.	″
α Centauri	3·58	− 0·464	+ 0·82
β Hydri	2·17	+ 0·716	+ 0·29
α Canis Majoris	1·34	− 0·034	− 1·25
θ Centauri	0·79	− 0·047	− 0·54
γ Pavonis	0·74	+ 0·013	+ 0·73
ε Scorpii	0·69	− 0·050	− 0·29
α Phœnicis	0·47	+ 0·014	− 0·44
β Trianguli Australis	0·44	− 0·030	− 0·40

II. Observations on the Appearance of the Comet of 1843, made at Cape Coast Castle, on the Coast of Africa. By G. Maclean, Esq. President of the Colony. Communicated by Captain Beaufort, R.N., Hydrographer to the Admiralty.

The comet was first seen at Cape Coast Castle on the evening of Friday, the 3d of March, at about a quarter to seven. Part of its tail only was then visible, bearing W.S.W., and making an angle of about 70° with the horizon, towards the south. It was of the same brightness throughout, and its breadth, which was little more than a degree, so far as it could be seen on account of both extremities being concealed by clouds, was also uniform.

March 4. This evening the whole of the comet was visible, although no nucleus could be distinguished. Its head, or what appeared to be so, almost touched the horizon, near the star *iota* in the tail of the whale; and its tail extended about 22° from that point in the direction of the constellation *Columba Noachi*.

March 5. Several glimpses of what appeared to be a nucleus were perceptible through the telescope of a theodolite. It appeared as a bright point, of the colour of *Venus*, but exceedingly small. Being invisible through the telescope of the sextant, distances could not be ascertained with any degree of precision.

March 6. The appearance of the comet was the same as the preceding evening. March 7, the brightness of the head and the length of the tail were much increased, the latter extending upwards of 34° in the direction of the constellation *Lepus*. Several stars were visible to the naked eye through the tail. On the 9th and 10th, the appearance of the comet was much the same as on the 7th; on the 17th it was visible, but the nucleus was very indistinct. The tail extended about 43° in the direction of *Sirius*.

March 19. This night was clear, and the outline of the comet

very plainly marked. The bright spot or condensation in its head was distinctly perceptible to the naked eye. On the 22d, although the sky was very clear, the nucleus was with difficulty perceptible, from which it appeared that the comet was increasing its distance from us with immense rapidity. The tail terminated midway between the stars ζ, η, and θ *Leporis*, and κ *Orionis*.

After this time the comet decreased in brightness and size every night. On the 23d its tail was about 38° in length; on the 26th about 35°, reaching a little past κ *Orionis*. Through ordinary land-glasses it still appeared as if there was a condensation of brighter matter in the centre of the head. The comet continued visible on clear nights till about the 10th or 12th of April, appearing as a thin haze; but after the 1st no observations could be taken with the sextant.

The following are the observed distances of the comet from *Sirius* and *Aldebaran*. They are given without any correction, just as they were read off from the sextant; and the observations were made about seven in the evening.

Day.	Distance from Sirius.	Distance from Aldebaran.	Day.	Distance from Sirius.	Distance from Aldebaran.
1843.	° ′	° ′	1843.	° ′	° ′
March 3	94 15	69 45	March 19	54 24	34 7
5	90 35	67 12	22	50 0	30 42
6	87 18	63 51	23	48 22	29 51
7	83 48	60 36	26	44 53	26 40
9	77 37	54 30	27	43 39	25 40
10	73 50	51 57	28	42 45	24 59
17	58 50	37 52	29	40 58	24 28
18	56 16	36 50	April 1	38 8	22 58

III. Extract of a Letter from J. R. Crowe, Esq., British Consul-General of Norway, to Dr. Lee, dated Alten, February 22, 1844. Communicated by Dr. Lee.

"The observatory at Alten, as you are aware, is the most northern in the world. We shall very shortly commence the series of preparatory transit observations you suggest. We had intended to have done so before; but the cold, since the sun revisited us on the 2d instant, has been so intense that we have not been able; the eye was no sooner brought near the glass than the latter was covered with a coating of ice. It was even dangerous to touch the metal. The thermometer has been varying from 24° to 28° below zero of Celsius, that is, from 12° to 20° below the zero of Fahrenheit, or from 44° to 52° belowing the freezing point . . . . It will be interesting to see what the minimum thermometer will exhibit at the top of the Storvandsfeldt by the end of next month. We shall then attempt the ascent, as by that time the surface of the snow becomes so hard as to bear walking upon with impunity."

IV. Elliptic Elements of Bremicker's Comet. Computed by Mr. William Götze. Communicated by Mr. Rumker, and also by Professor Schumacher.

Perihelion Passage, 1840, Nov 13, Berlin Mean Time.

Ascending node	248° 55′ 57″·15	On the ecliptic, and from the mean equinox of 1841, Jan. 0.
Inclination	57 57 51·59	
Distance of perihelion from node.....	133 36 8·33	
Angle of eccentricity ...	76 5 21·52	
Log. perihelion distance	0·1705436	
Log. semi-axis major ...	1·7032559	

With the above elements, the following co-ordinates of the comet to the equator have been computed from the mean equinox of Jan. 0, 1841, assuming, according to Bessel, the mean obliquity = 23° 27′ 36″·06, viz.

$$x = r\,[9{\cdot}7865707]\,\sin(v + 97^\circ\,36'\,53''{\cdot}34)$$
$$y = r\,[9{\cdot}9989828]\,\sin(v + 14\;41\;53{\cdot}70)$$
$$z = r\,[9{\cdot}8998221]\,\sin(v + 105\;42\;19{\cdot}84)$$

The places of the comet, calculated from the above elements, are compared with the places observed at Berlin and Hamburg, and the differences are inconsiderable. Mr. Rumker states that Mr. Götze is now engaged in computing the remainder of the observations of this remarkable comet made at Bonn, Milan, &c.; after which he will proceed to determine with greater accuracy the sidereal revolution.

V. Elements of the Comet of Faye, 1843–4. Corrected by the Observations at Greenwich on Jan. 22, Feb. 19, 20, and 22; Paris, on Dec. 2; Cambridge, on Dec. 8 and 16; at Berlin, on Dec. 17; Hamburg, on Jan. 23; and Starfield, on January 13, and Feb. 19 and 22. By J. R. Hind, Esq. Communicated by the Rev. R. Main.

Epoch, 1844, Jan. 1·0, Greenwich Mean Time.

Mean longitude	60° 30′ 0″·2	
Longitude of perihelion on orbit.....	50 34 19·0	Mean equinox.
Argument of latitude in perihelion...	201 24 13·1	
∴ ☊	209 10 5·9	
Inclination	11 21 2·8	
Angle of eccentricity	33 30 52·3	
Mean daily sidereal motion...	477″·56329	
Log. semi-axis major.....	0·5806505	

Period of sidereal revolution, 7^{yrs}·43

Direct.

The elements represent the Greenwich observation on the 20th of February with errors of − 2″·3 in longitude and − 11″·0 in latitude.

The observation at Berlin on Dec. 17 gives + 8″·4 in longitude and + 24″·1 in latitude.

The period agrees exactly with that found by Plantamour, and very nearly with the results of Le Jeune, Faye, &c.

London :—Printed by Moyes and Barclay, Castle Street, Leicester Square.